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PATENT  
016295.0693

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

In re application of:

Pham, Mahn Hung

Serial No.: 09/950,026

Filed: September 10, 2001

Invention: Computer System with Improved  
Error Detection

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Group No.: 2113

Examiner: Yolanda Wilson

Commissioner for Patents  
P.O. Box 1450  
Alexandria, VA 22313-1450

DECLARATION OF ROGER FULGHUM  
SUBMITTED PURSUANT TO 37 C.F.R. § 1.131

I, Roger Fulghum, hereby declare and state that:

1. I am a lawyer at the law firm Baker Botts L.L.P. ("Baker Botts"). Baker Botts is involved in the preparation and prosecution of patent applications for Dell Inc. ("Dell"). I am responsible for supervising the preparation and prosecution of patent applications for Dell in Baker Botts's Houston office.

2. A redacted copy of a Dell invention disclosure is attached to this Declaration as Exhibit A. This invention disclosure has been titled "Stamping Information Electronically Inside Failed Memory Module" and has been assigned Dell reference number DC-03106. This invention disclosure was received by Baker Botts on May 18, 2001 for the preparation of a patent application. In July and August of 2001, Baker Botts researched the

prior art related to the invention and prepared the patent application concerning the DC-03106 invention disclosure.

3. On September 10, 2001, the patent application concerning the DC-03106 invention disclosure was filed with the U.S. Patent and Trademark Office. The patent application was titled "Computer System with Improved Error Detection" and was assigned serial number 09/950,026.

4. I hereby declare that all statements made herein of my own knowledge are true and that all statements made herein on information and belief are believed to be true. I declare that these statements are made with the knowledge that willful false statements, and the like so made, are punishable by fine or imprisonment, or both, under Section 1001, Title 18 of the United States Code, and that such willful false statements may jeopardize the validity of the application or any patent issuing thereon.

Signed this 18th day of August, 2004.

  
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Roger Fulghum

# Exhibit A

**DELL CONFIDENTIAL****DC-03106**

Received: April 06, 2001

**INVENTION DISCLOSURE FORM**  
(Rev. 11/01/2000)**INVENTION TITLE:**

Stamping information electronically inside failed memory module

**INVENTOR INFORMATION:**  
(Must be filled out completely)

Employee ID#	20315	Full Name	MANH HUNG PHAM
Phone		Work Phone	512-728-4513
Current Director	Dick Hunter	Current Title	AFC General Admin
Former VP	Dick Hunter	Former Title	AFC General Admin
Is he/she an employee of Dell?			
Is he/she a subcontractor?			
Are you a partner?	Yes	Is he/she a partner?	

**DEVELOPMENT PARTNER/CONSULTANT:**

Has the invention developed in connection with a development partner or consultant that contributed to the invention?	No
If yes, please describe:	

**PLEASE DO NOT SKIP THIS PART.** This information is used to determine Dell's legal rights in the invention. **IMPORTANT!** - If you know for a fact that your idea was embodied in a product offered for sale or used by Dell more than a year ago, then please tell us now; otherwise you will have to refund your invention award to the company at a later date.

**FIRST DISCLOSURE, USE OR OFFER OF SALE OF THE INVENTION:**

Date of invention	11/2000	Invention first described in:	
Date of invention to public			
First use of the invention	TBD	First use of the invention	
Has the invention been disclosed to others?	No		
Has the invention been disclosed to others?			
Was the invention disclosed under a Non-Disclosure Agreement (NDA)?	N/A		
Planned date of first disclosure of product using invention	TBD		
Planned date of first disclosure of product using invention	TBD		
Date of first production of the invention or ship date	TBD		

**INDUSTRY STANDARDS / STANDARDS COMMITTEES:**

Has the invention been used or incorporated in any industry standard?	No
Which standard?	
Name of standards committee	
Is the inventor a member of the standards committee?	N/A
Name of the standards committee	

**COMPLETE WRITTEN DESCRIPTION OF INVENTION:**

*Prepare a written description of your invention using the outline below. Just fill in the blank after each topic. Adjust the amount of space for each topic as needed. Be sure to include any sketches, diagrams, flow charts, drawings, etc. which will aid in understanding the invention.*

**a) THE PROBLEM**

Give the ability to the host computer to record and to check the failure condition and environment of its own memory module(s). It also allows the repair center and the manufacturer to have the trace ability and the failure condition of each individual failed memory module once it arrives to them, even the case that all paperwork is lost.

**b) THE PRIOR METHODS/APPARATUS USED TO SOLVE THE PROBLEM**

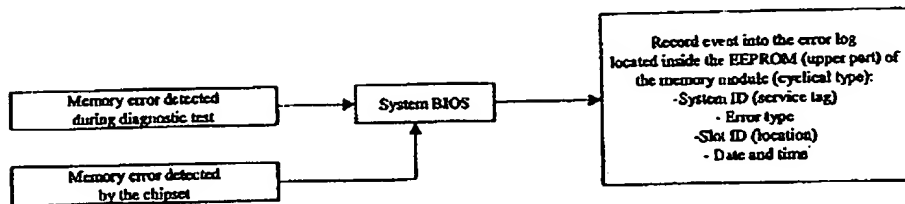
The closest way to solve this type of problem on failed memory module is a written tag issued with each failed unit. The closest similar technology on recording electronically the fail log is used on hard drive. In this particular case, the fail log is written in a reserved location.

**c) YOUR PROPOSAL TO SOLVE THE PROBLEM**

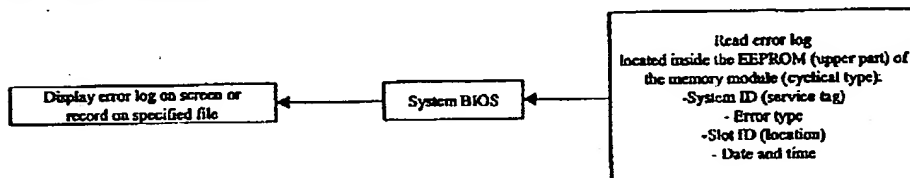
- Up to now, all memory errors messages, location and system environment are displayed on the screen, and some time, recorded on the non-volatile memory of the motherboard. On this proposal, the information will be recorded on the un-used portion of the non-volatile memory of the memory module in cyclical log form. The host computer can access to this log to create, update or read the information via BIOS commands.
- In this proposal, each failed module will now have its own individual log that is part of the hardware. The failure information and condition will stay internally with the module almost permanently until it is erased or over-written by a host computer, a tester or a device that can access to the non-volatile memory device (EEPROM). The host system can now use the log to verify the condition of the memory module on each bring up. The memory module manufacturer now can use the log in complement with the existing tagging system to study the failure mode.
- With this proposal, DELL will have the advantage on time reduction during trouble shooting and replacement of failed memory modules, a better way to document the failure on the manufacturing line. In the field, this proposal will help to reduce the number of unnecessary dispatches, a better diagnostic tool and a complement to the existing way to document failure at customer site.

## d) DRAWING, SKETCH

Error recorded into the log inside the EEPROM of the memory module



Read back the log inside the EEPROM of the memory module (if available)



**WITNESSES: (Please list two Dell witnesses below.)**

Each witness should at least read about and understand the invention. The best witnesses will also have observed the invention in actual operation.

**WITNESS:** Ray Rashid

**WITNESS:** Greg Knight